

ABSTRACT OF THE DISCLOSURE

A communication system using a layering architecture that supports peer-to-peer communication between ONUs in an Ethernet-based PON. The system includes a physical layer receiving frames from an OLT; and data link layers including an emulation layer, a MAC layer, a MAC control layer, and a MAC emulation layer. The data link layers further include a P2PE layer for generating and managing an address table that matches PON-tags of frames received from ONUs and transmission point addresses, and a mirror address table of the address table, and an FRM layer for performing, according to a target address of the frames, an upstream process that transmits frames to an upper layer and a downstream process that transmits frames to a lower layer.